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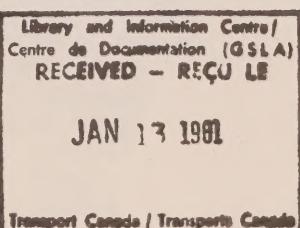
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July 24, 1980  
le 24 juillet 1980

Discussion Paper  
Document de travail

HAMILTON AIRPORT DEVELOPMENT  
DEVELOPPEMENT DE L'AEROPORT D'HAMILTON

Minister of Transport  
Ministre des Transports



The attached Discussion Paper is circulated in English only. A bilingual version will follow in the near future.

Le document de travail ci-joint est distribué en anglais seulement. Une version bilingue sera disponible bientôt.

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OBJECT

The object is to obtain approval in principle from the Government for a major expansion of the airport at Hamilton. This Paper outlines the reasons for the expansion, the major improvements envisaged, the planning issues still to be resolved and the projected order of magnitude expenditure.

BACKGROUND

The original airport at Mount Hope was built by DND in 1940 as a Flying Training Unit. The main runway 06-24 was extended to 6,000 ft. in 1952 to accommodate Sabre Jets. The airport became surplus to DND requirements in the early sixties and was transferred to DOT. The airport is operated by the City of Hamilton under a lease agreement with Transport.

In 1968, a proposal to expand the airport for air carrier jet traffic led to a recommendation to build a new 11-29 runway south of the existing airport. To obtain public input to this proposal, meetings were held. Strong opposition was encountered, particularly from the Federation of Hamilton Environmental Groups (8 different organizations), which submitted a major brief to the Minister of Transport in 1971. As a result of this submission and of the concern expressed by other groups and individuals primarily with the noise impact on the City of Hamilton, the plan was not pursued. Instead, two of the existing runways were strengthened and a small terminal building was built to provide facilities for Nordair to operate B737 services on several short-haul routes.

In March 1972, then Transport Minister Don Jamieson announced that the Government would take immediate steps to upgrade existing airport facilities in southwestern Ontario and continue studies to determine the long-term requirements of the area as a whole. The proposed short-term works included extensive improvement of airport facilities at Hamilton, Windsor and London to provide better domestic services from these centres and the capacity to originate and receive long-haul charter and international flights. These steps were also intended to relieve existing pressures on Toronto International Airport (TIA).

Because the immediate improvements for the Hamilton Airport involved construction of a new runway, again citizen concern about the resulting social, urban and environmental impact became evident. In addition, a review of forecast passenger demand showed an increase over previous forecasts to such a degree that a complete upgrading of the passenger handling facilities appeared to be necessary. Subsequently, the Hon. J. Marchand, then Minister of Transport, directed that a thorough detailed study be undertaken to determine the best location for the provision



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of facilities to serve the needs of the Hamilton/Brantford/Niagara area. This study was to consider the option of expanding the Hamilton Airport at Mount Hope, as well as relocating the airport to a new site. Furthermore, it was emphasized that there would be public dialogue as an integral part of the study with citizen involvement from the outset.

The actual study began in early 1975, and immediately two committees were established to ensure public dialogue and coordination with other governments, and other Federal Government Departments and Agencies:

- 1) A Citizens Ad Hoc Advisory Committee
- . 2) An Intergovernmental Technical Co-ordinating Committee

These Committees met regularly throughout the study program which concluded in February 1977. They reviewed terms of reference for each study and the resulting study reports. They also had the opportunity to recommend additional studies. The actual studies were carried out by Transport Canada or on behalf of Transport Canada and included forecasting, identification of facility requirements, and a site selection process.

In the initial phase of the Study Program, four concepts were identified for the development of the existing site (known as 10.1, 10.3, 10.4 and 10.5) and five alternate sites for a new airport for the Hamilton area (known as 14A, 14B, 15, 20 & 21). These nine concepts were assessed in detail utilizing the following criteria:

1. Engineering/Technical Factors
  - Air Traffic Services
  - Telecommunications
  - Airspace
  - Civil Engineering
2. Socio-Economic Considerations
3. Environmental Impact
  - Ecology and Air Quality
4. Noise/Displacement Impact
5. Agricultural Impact
6. Ground Access Considerations
7. Regional Planning Considerations
8. Costs

Thirty-seven study reports were produced in total.

After the reanalysis, the initial value of the model was improved, but the uncertainty of the initial value still remained. The uncertainty of the initial value of the model was reduced by 20% in the reanalysis, and the uncertainty of the initial value of the model was reduced by 10% in the final analysis. The uncertainty of the initial value of the model was reduced by 10% in the final analysis, and the uncertainty of the initial value of the model was reduced by 10% in the final analysis.

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In March 1977, the Citizens Ad Hoc Advisory Committee produced a majority and minority report. The majority report advocated full scale development of the existing airport, in accordance with Concept 10.4 (similar to a much earlier proposal by Glanbrook Town Council). The second, a minority report, recommended minimal improvements to the existing airport within the existing boundary (no new runways or runway extensions), with relocation to a new site (Concept 20) only when the need could be proved. The existing airport would then be closed.

Transport Canada also prepared a report which, in summary, recommended that "Airport facilities to serve the natural demand from the Hamilton/Niagara/Brantford area for the foreseeable future can and should be developed at the existing Hamilton Airport at Mount Hope". The report also stated, "Due to the relatively small differences in impact between the top three concepts for development of the existing site (Concepts 10.1, 10.3 and 10.4), it is recommended that all three be considered in the early Master Planning stages so as to clearly establish the important differences between them".

The Intergovernmental Committee elected not to prepare its own recommendations but chose to provide comments on the technical recommendations prepared by Transport Canada. Comments on the draft report were received in the fall of 1977 and submitted to the Minister as part of the final report in December 1977.

On January 30, 1978, the then Minister, Mr. Lang, announced his acceptance of all the technical recommendations contained in the Transport Canada report and stated that detailed master planning would begin at once.

In accordance with the recommendation accepted by the Minister, the three top concepts were further evaluated. This evaluation resulted in a recommendation to select Concept 10.3 for detailed master planning. Concept 10.3 involved a new 2,349 m runway parallel to the existing 11-29 runway but located some 1,000 m north, additional taxiways, apron and a new passenger terminal building in a completely new area north of the new runway. Mr. Lang announced his acceptance of this recommendation on November 15, 1978.

Subsequently, on March 7, 1979, the Minister announced approval of approximately \$1 million in interim improvements at the Hamilton Airport. These consisted of modifications to airport roads, the air terminal parking area, refurbishment of runway 11-29 and taxiway, edge lighting, and expansion of the air carrier apron. These improvements were approved because they were complementary to the proposed expansion of the airport and would assist in maintaining the level of service for the existing scheduled air carrier. The Minister also announced that he was taking steps to encourage Air Canada to initiate airline service to the Hamilton Airport after the Airport had been developed.

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FACTORS

OVERVIEW

Because the concepts for the expansion of the Hamilton Airport had been prepared in 1976 and 1977, as part of the detailed master planning process, a review of the forecasts was initiated to incorporate more recent socio-economic data. Subsequently, the Government's need to reduce Federal expenditures indicated that the concept selection should be reconsidered giving much greater importance to the initial capital investment required.

AVIATION ACTIVITY FORECASTS

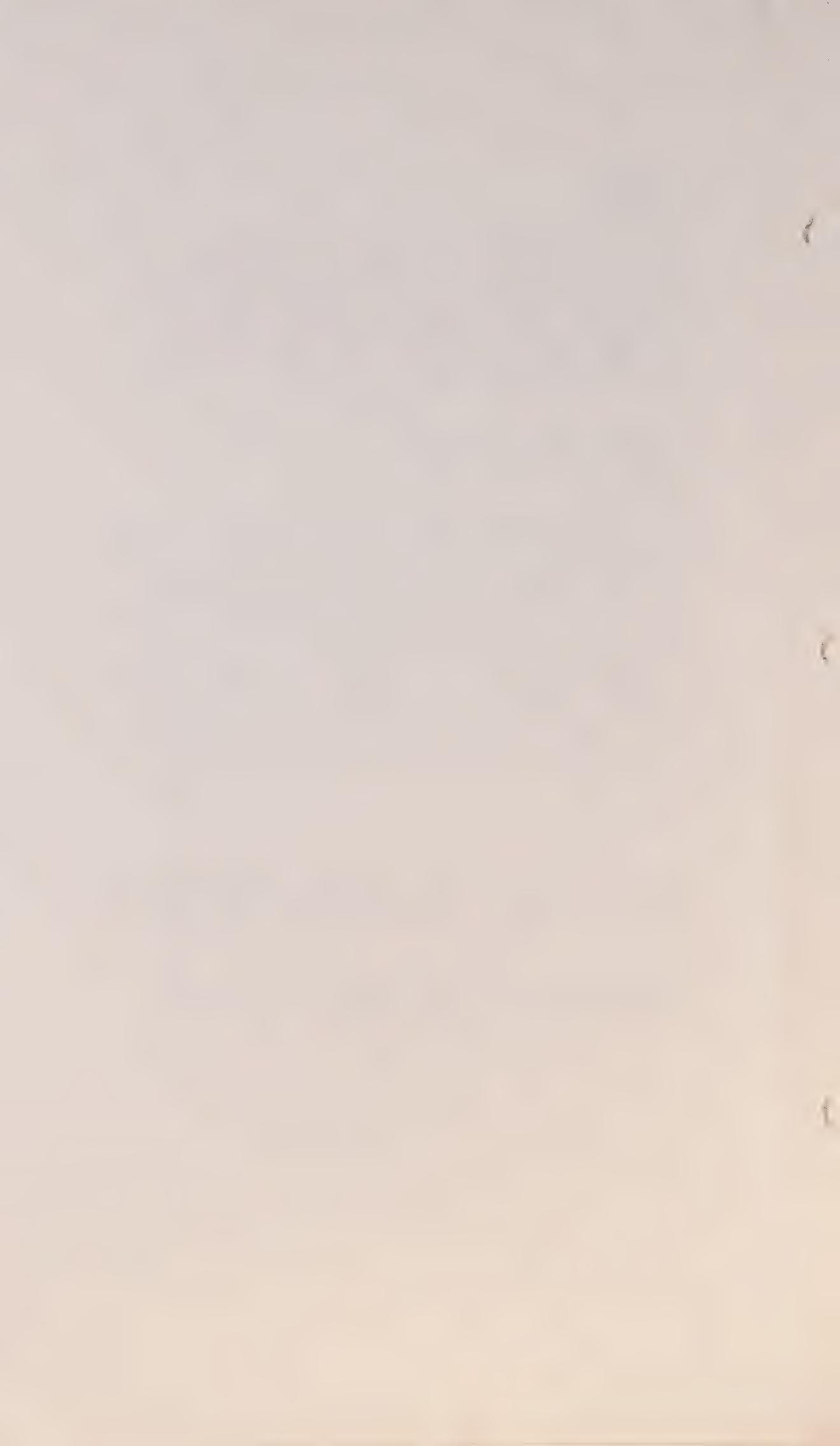
Background

Passenger forecasts for Hamilton as part of the Southwestern Ontario Airports System were completed in April 1973. In essence, the total potential air passenger demand originating from various geographic areas in Southwestern Ontario was estimated for the years 1982 and 1990. Based on that estimate and on the analysis of viable routes to and from each airport, forecasts of expected patronage for the three major airports in S.W. Ontario (Windsor, Hamilton and London) were prepared. (This, of course, assumed the availability of adequate facilities at these airports.) The forecasts were later extended to include the years 1977, 1980 and 1985, under the Southwestern Ontario Airport Aircraft Movement Forecasts - April 1975. Finally, these forecasts were further up-dated in April 1978.

Methodology

The general forecasting approach that has to be taken for Hamilton is quite different from the approach that is normally used for an airport to serve a market the size of Hamilton/Brantford/Niagara\*. The usual

\* Population of the catchment area is in the order of 1 million although this population is itself a function of the services offered.



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forecasting methodology relies on historic aviation demand in the context of the socio-economic environment. This forecasting approach could not be used for Hamilton because of the presence of TIA with convenient same plane service to many destinations, albeit with a significant access/egress time penalty. Therefore, in a very true sense, Hamilton Airport is in competition with Toronto International; Hamilton is closer to the Hamilton market but Toronto offers better service. This dichotomy, sometimes called the shadow effect, results in a solution which requires that the service be initiated to attract some passengers so that the service can be increased to attract more passengers. Ultimately, this iterative process leads to a mature division of traffic given that a carrier will initiate service to the markets that can be viable.

#### Important Forecasting Assumptions

##### a), Traffic vs Demand

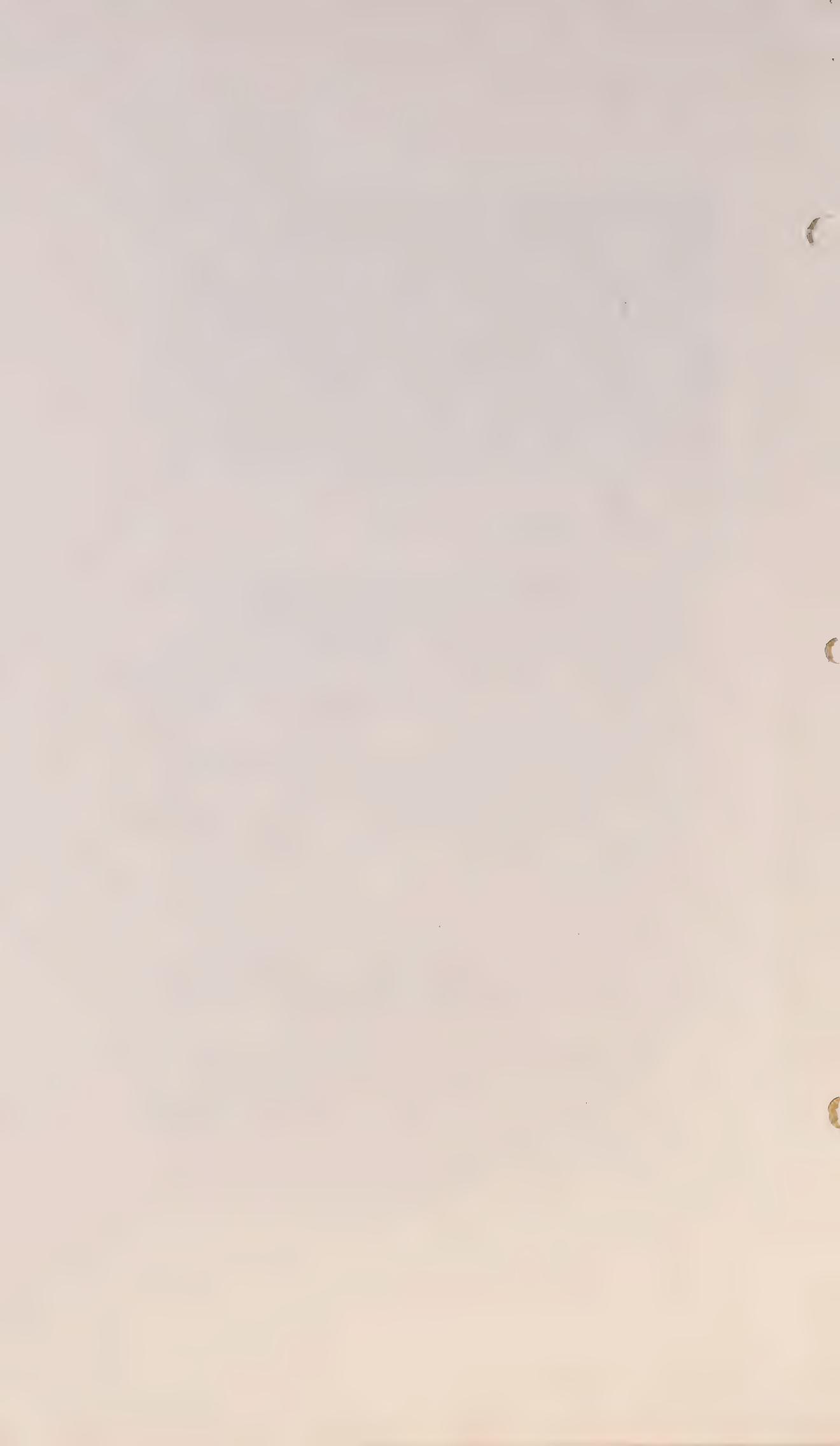
From the foregoing brief comment on methodology, it is apparent that the historical passenger traffic handled out of Hamilton Airport is not indicative of the natural demand which exists in the catchment area. Most of this natural demand is now served by the Toronto International Airport (TIA) primarily because of the number of direct flights and frequency of the flights offered.

The Hamilton forecasts are based on the carriers providing the flights judged to be commercially viable to accommodate the natural demand produced by the Hamilton Airport catchment area. In serving the Hamilton area natural demand, a secondary benefit would be the provision of a measure of relief to the congestion problem at Toronto International Airport.

##### b) New Facilities

The increased role of Hamilton Airport to serve the natural demand, in addition to being predicated on better air service, assumes that new facilities will be provided which are commensurate with this specified role. These requirements are:

- 1) airside facilities will be improved to allow operation of aircraft on stage lengths consistent with an 8000' runway and of size and weight consistent with the routes to be served; eg. DC-9, B-727 for scheduled service and L1011, DC-10 and B-747 for charter service,
- 2) navigational aids will provide the same reliability of service now offered to aircraft operating into Toronto International Airport;



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- 3) airport access will be improved through more frequent and more diversified limousine services and better road signing in the area so that there will be no perceived difference between the accessibility of Hamilton Airport and Toronto International Airport for persons living at equal driving times from the two airports;
- 4) the level of service provided by Canadian immigration/customs will be similar to other mainline airports without U.S. pre-clearance.

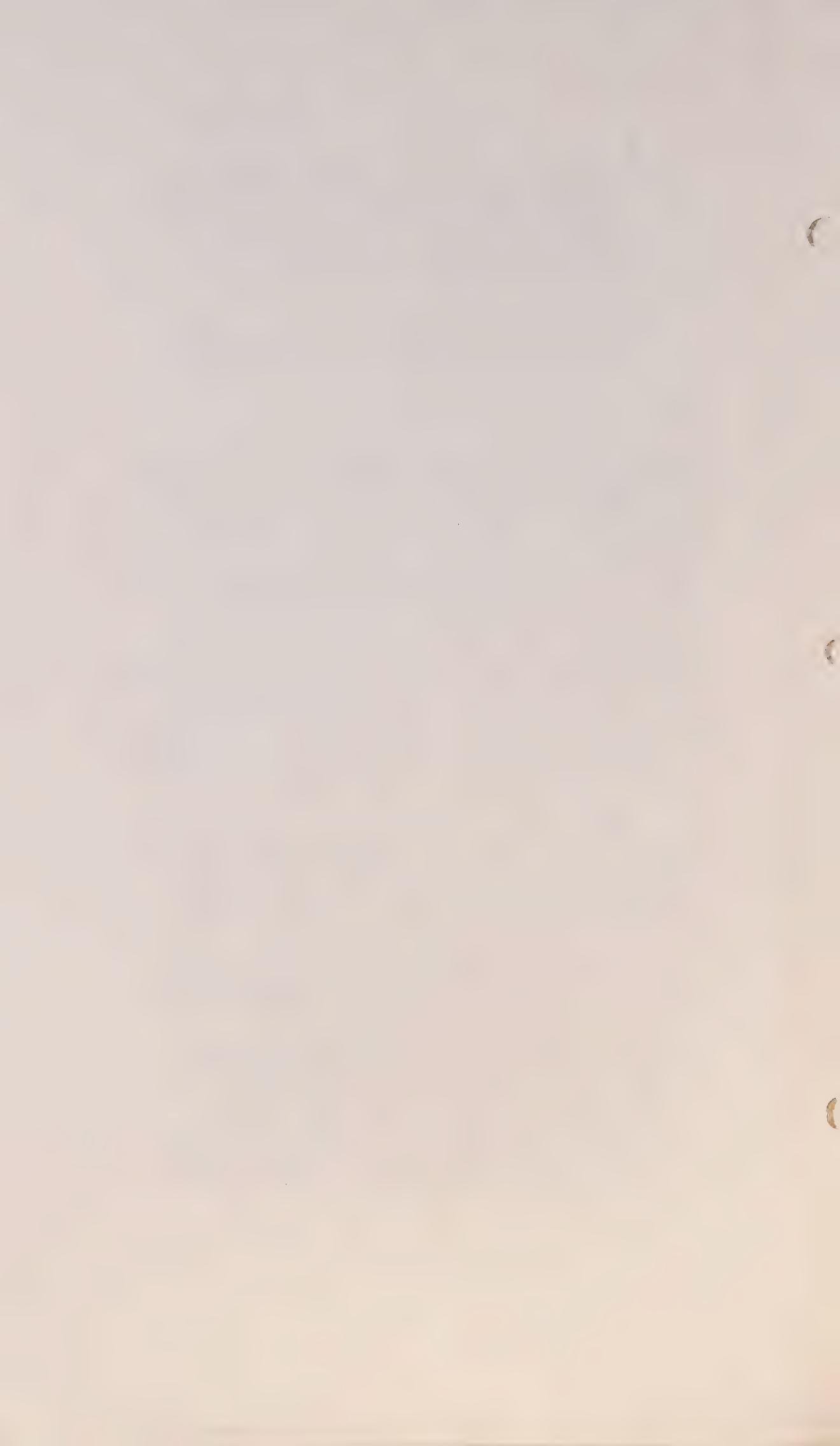
#### Air Traffic Forecasts - Passengers

The approach used in preparing forecasts of the potential for expanded commercial air services at Hamilton, was first to study the domestic, transborder and international traffic segments. Predictions of the potential traffic were then made by considering Hamilton within the Toronto catchment area and estimating the portion of Hamilton area residents who would use Mount Hope if service were improved. Implicit in this approach for domestic traffic is the assumption that Air Canada would choose to, or be directed to, provide those services found to be commercially viable but beyond the capability/policy restrictions of the regional carrier, Nordair. It was also assumed that Nordair would continue to operate a limited number of routes consistent with its role as a regional carrier. In the case of the domestic sector, it is forecast that additional services would be commercially viable by 1986 and 1991 to some Western Canadian destinations, Winnipeg, Calgary, Edmonton, Vancouver, depending on the route network.

With respect to transborder services, Hamilton contributes less than half of the patronage on the only transborder route now offered at Hamilton (Hamilton-Pittsburgh). The majority originate in Montreal and transit at Hamilton (see Table 1). Thus, no new transborder routes seem likely to justify scheduled transborder service.

A further assumption was made that Hamilton would provide a base for charter service, particularly to Southern sun-spot destinations as detailed below:

Charter operations at Hamilton Airport will be offered in proportion to the number of trips made by people living in the catchment area of this airport. The Hamilton Airport catchment area, which covers the cities of Hamilton, Guelph, Brantford, Kitchener, St. Catherines and their surroundings and the Niagara Peninsula, generates approximately 22% of the international and U.S. sun-spot trips now using the Toronto International Airport.



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It was assumed that carriers will operate charter flights to the U.S., to the Caribbean and Mexico and that approximately 80% of the people living closer to Hamilton Airport would use the airport for transborder charter trips and 70% of these people would use Hamilton Airport for Southern charter trips. In addition, some charter flights to Europe from Hamilton Airport might be offered in the 1986 or 1991 period within the limitations of the 8,000' runway. (These flights would have to re-fuel at another stop in Eastern Canada in the eastbound direction due to the length of the runway which would limit the fuel load.)

During 1978-79, the Hamilton Airport forecasts were updated. This resulted in an adjustment downward of the earlier forecasts to reflect the relatively more pessimistic assessment of Canadian economic growth. At the same time, these new forecasts (see Tables 2-5) were developed consistent with the specific role of Hamilton as a regional airport serving the market area scheduled and charter demand.

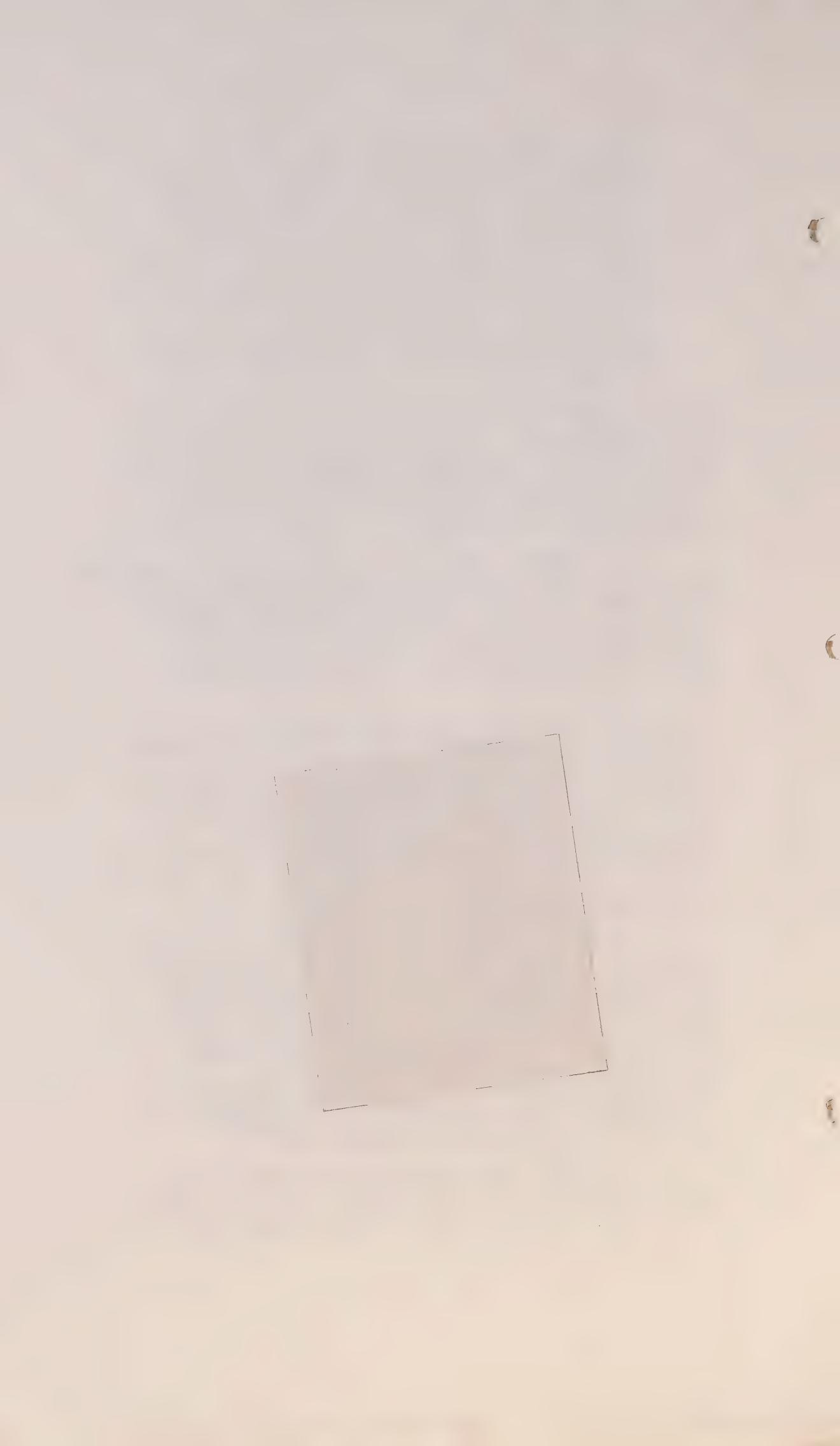
In summary, the total enplaned + deplaned passengers at Hamilton are expected to grow from 100,000 in 1978 to 850,000 in 1996. This substantial growth, as indicated previously, is based on the expectation that Hamilton Airport will serve the demand of the natural market area. Slightly less than two thirds of this growth is generated by scheduled travel. The remainder comes from charter traffic.

The 1978 unit toll planning peak hour passenger volume is estimated to have been 80 passengers. It is forecast that this planning peak volume will be in the order of 250 - 300 passengers by 1991. This is based on the assumption that charter traffic will be accommodated in off-peak periods. The forecast assumes also that the demand can be accommodated with an acceptable level of service in terminal facilities sized to meet the needs for scheduled service.

#### Aircraft Movement Forecasts

Aircraft movements are comprised of two basic categories in terms of operations, viz. itinerant and local. In essence, "itinerant" refers to flights to or from another airport while "local" refers to operations by aircraft which remain in the vicinity of the airport. There are two other basic categories in terms of use, viz. air carrier and general aviation (G.A.). The air carrier movement forecasts for Hamilton were developed from the passenger forecasts outlined above. The non-air carrier itinerant and the local movement forecasts were developed directly from relevant socio-economic data.

The Hamilton Airport tower was commissioned in 1969 and in that year, the airport ranked 12th among Canadian airports in terms of total aircraft movements, 9th for local movements and 21st for itinerant move-



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ments. Considerable growth has occurred in the ensuing decade; the corresponding rankings in 1978 were 7th for total movements, 6th for the local category and 14th for itinerant. Within the itinerant category, the air carrier component has increased sharply in percentage terms (a four-fold increase) but, with only 4,500 air carrier itinerant movements, it still ranks about 40th in Canada.

Because the air carrier movement forecasts are derived from the passenger forecasts, they are premised on the same assumption that Hamilton Airport will increase its level of air carrier operations to serve the natural demand of the local population. The forecasting process involved an assessment of future fleet mix, appropriate aircraft for new and existing routes, and average load factors. This resulted in a forecasted growth of air carrier itinerant movement from about 4,500 in 1978 to over 15,000 in 1991.

The itinerant G.A. forecasts are based on the historical relationships between these itinerant movements and the provincial economy (Gross Provincial Product) between 1969 and 1978. This is appropriate because of the stability of each series of data. The resulting forecast indicates an average annual growth rate of 4.8% between 1978 and 1991. When combined with the forecast for itinerant air carrier movements, the total itinerant forecast is 126,000 in 1991 compared with just over 65,000 in 1978.

The historical pattern for local movements at Hamilton has been quite erratic with wide fluctuations around a general growth trend of 3.5 to 4.0 percent per year. For the future, a gradual flattening is expected in the growth trend line. The forecast of 197,000 in 1991 represents an average annual growth rate of 2.1% from the 1978 level of 150,000.

Insofar as planning criteria are concerned, the "Planning Peak Hour Total Movements" are forecast to grow from 150 in 1978 to 196 in 1991. Planning peak hour movements for scheduled air carriers are forecast to increase from 2 in 1978 to 5 in 1991. The much smaller growth in planning peak forecasts compared to annual is due to the considerable potential for peak spreading at the Hamilton Airport.

#### SITE DEVELOPMENT OPTIONS

A brief description follows of the three concepts which were studied in depth and led to the recommendation to select 10.3.

##### Concept 10.3 (Exhibit 1 )

As described in the Background, this concept involved construction of a new air carrier runway in the north portion of the airport. The air terminal complex would be developed north of the new runway. All existing fixed base and G.A. facilities



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would expand into the area released by the relocation of the air carrier complex.

Concept 10.3 designated an area for airfield support services south of the new 11L/29R runway, north of the existing 11R/29L runway and west of existing Runway 06/24. Assuming development of facilities to meet 1991 requirements, this Concept was estimated to cost in the order of \$80 million plus land acquisition estimated at \$10 million (\$1977).\*

Concept 10.1 (Exhibit 2)

This concept involved construction of a new air carrier runway in the south portion of the airport. The air terminal complex would be developed south of the new runway, in the area now occupied by the existing air terminal building and G.A. facilities.

Eventually the terminal and service operations development was predicted to require the relocation of all existing fixed base and other G.A. facilities to an area north of the proposed runway and east of the existing Runway 06/24.

It was anticipated, when Concept 10.1 was developed, that airfield support services would be located south of the new air carrier runway and west of the existing 06-24 runway. Assuming the development of facilities to meet the 1991 demand required the relocation of G.A., the costs would be approximately the same as Concept 10.3\*

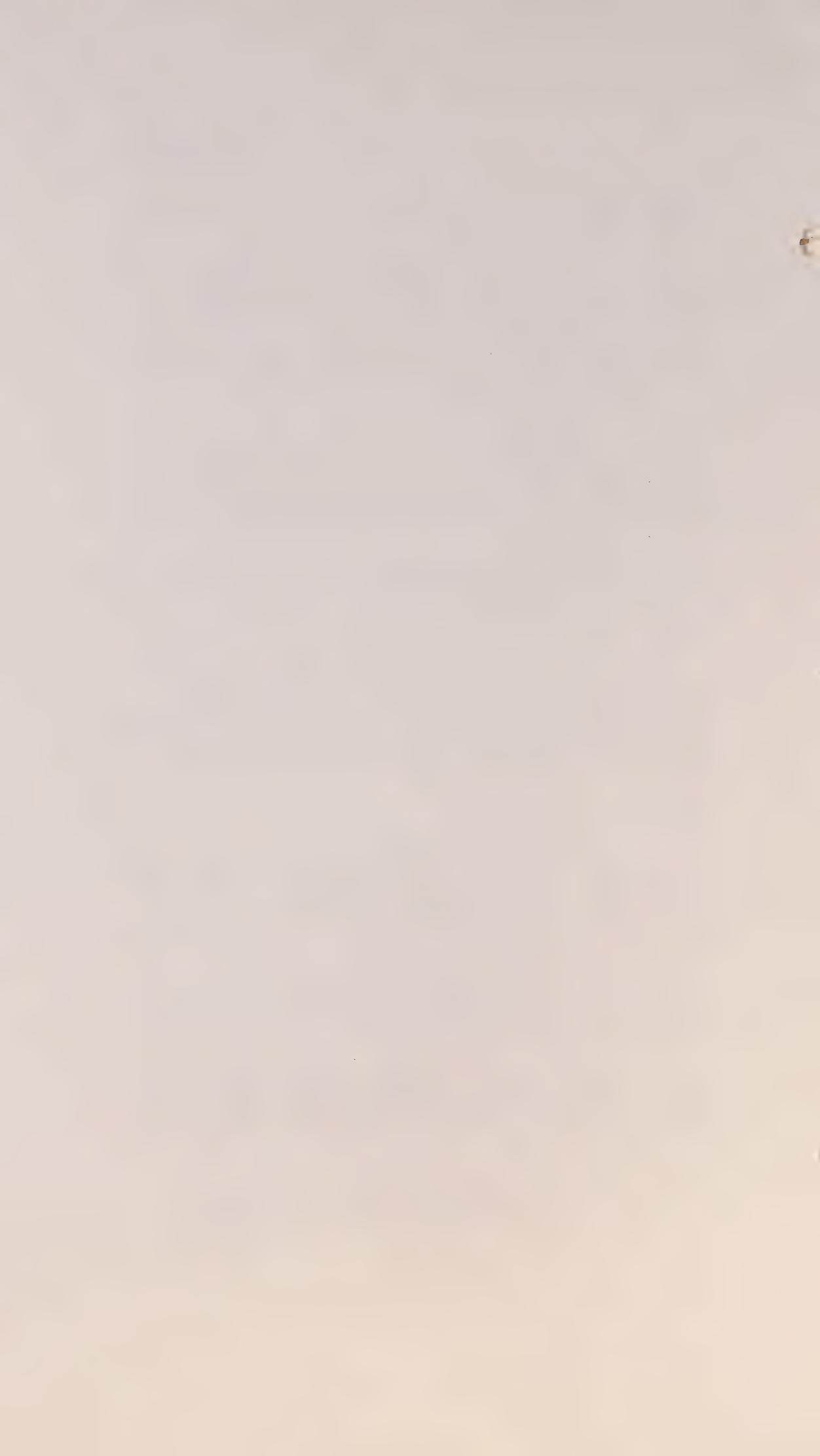
Concept 10.4 (Exhibit 3)

Concept 10.4 involved construction of a new air carrier runway 09-27, north of the existing 11-29 runway. The resultant runway system would therefore involve four different runway orientations. The existing runway 06-24 would be shortened and restricted to G.A. operations.

As with Concept 10.3, a new air terminal complex would be developed on the northside of the airport and would remain and expand in the existing G.A. and air terminal area.

The airfield support services would be developed in a triangular land area between the buttons of runway 11 and 06. Costs for this concept were estimated to be greater than those for Concepts 10.1 and 10.3.\*

\*NOTE: Costs quoted and Exhibits 1, 2 and 3 are based on expansion in accordance with the Concept as developed in the Study Program.



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Evaluation of Site Development Options 10.1, 10.3, 10.4

In December 1977, when the initial report entitled "Hamilton Airport Study Technical Recommendations" was released, it recommended that airport facilities to serve the Hamilton/Niagara/Brantford area be further developed at the present location of the Hamilton Airport (Mount Hope), rather than at a new site. It also recommended that, because the differences between the three most promising Concepts for the expansion of the airport, Concepts 10.1, 10.3, and 10.4, were small, these concepts be further developed and evaluated prior to a decision being taken. However, in the absence of this detailed evaluation, Concept 10.4 was favored by the Department principally because of the reduced social impact although it was recognized that the runway configuration would imply significant operational constraints. Concept 10.4 was also the preferred Concept of the majority of the Members of the Ad Hoc Advisory Committee associated with the Hamilton Airport Study, probably for the same reason.

In October 1978, the detailed evaluation of the three Concepts was completed and published in a report entitled "Hamilton Airport Study Concept Selection Report". The Report examined 14 factors pertaining to the capacity, safety and operational effectiveness of the three promising Concepts and recommended Concept 10.3. Concept 10.1 was ranked last of the three primarily because it would result in a two runway airport which would mean less airside capacity. As well, it was not as operationally efficient as 10.3 or 10.4. Concept 10.4 was not selected because it was markedly inferior to Concept 10.3 in terms of operational capacity.

REVIEW - FALL OF 1979

The situation in the fall of 1979 can be summarized as follows:

- 1) A Ministerial decision had been taken and announced to the effect that the airport would be expanded at the existing site.
- 2) A Ministerial decision had been taken and announced that Concept 10.3 would be used for the development of the airport.
- 3) Although not a firm figure, it had been indicated that the proposed development would cost in the order \$100 million (1979 \$).

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- 4) No indication had been received from Air Canada that they were prepared to serve Hamilton on the routes forecast to warrant service.
- 5) The Government was faced with the need to reduce expenditures wherever possible.

From a review of the forecasting approach, it was evident that the future use of the airport is very much dependent on the degree to which air services are offered by the air carriers. This is in addition to the normal uncertainty which is always inherent in air transportation activity forecasts as a result of the need to use forecasts of future economic activity and demographic development. The confidence that could be placed in the forecasts was very important because it was recognized that implementation of the recommended Concept as originally proposed would result in very high front end costs principally because of the need to develop a totally new area for the air terminal building and associated facilities.

Given the foregoing and recognizing the need to phase the development to the maximum extent possible to avoid premature investments, the Minister asked that a review of the proposed development be conducted and that this review include reconsideration of Concept 10.1. In addition, an attempt was to be made to obtain a more precise commitment from Air Canada.

#### MINIMUM DEVELOPMENT OPTIONS

It is apparent that certain major elements of the proposed expansion are common to all options for development. In addition, certain other expenditures are necessary to maintain the airport's operational status irrespective of the development plans. The future major expenditures which will be required to maintain the airport's capability at the current level of service can be broken out as follows:

	<u>1930 \$ 000</u>
New Air Traffic Control Tower	\$2500 to \$3000
New Firehall	\$ 450 to \$ 550
Taxiway to 29 Button of Runway 11/29	\$ 800 to \$ 900
Replacement Water Supply System	\$1500 to \$2000

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Moreover, any development of the airport for expanded air carrier service requires a new air carrier runway with precision approach aids, lighting and taxiways (1980 \$000) \$20,000 - \$25,000.

To these basic elements must be added the air terminal building and associated facilities and services plus the ancillary support facilities and services. It was in this area that it was recognized some major reduction in the cost could be achieved essentially by not moving the air terminal building complex in the initial phase.

Thus, the most significant cost reduction could be achieved by providing only a minimum expansion to the existing terminal, rather than initially developing a new terminal complex in the north section of the airport. This location for the terminal building is consistent with Concept 10.1 and can be achieved with a phased development of Concept 10.3 (Exhibit 4). With Concept 10.3, future construction of a new ATB to the north would be required to preserve the attributes of the original concept layout, whereas Concept 10.1 would envisage eventual re-location of the G.A. facilities.

In terms of airside capacity, Concept 10.1 was rejected during an early selection process principally because it did not offer as much capacity as 10.3 or 10.4. A reassessment indicated that the addition of a new parallel G.A. runway to the north of the proposed air carrier runway would imbue the scheme with airside capacity similar to that of Concept 10.3 but with the additional cost of a new runway.

#### ALTERNATIVES

There are three basic alternative courses of action:

1) Retain the Status Quo

This alternative involves advising the community that, in view of the Government's commitment to reduce expenditures, no major development of the airport can proceed at this time. A further statement could be made to the effect that this decision would be reviewed at some later date, for example, in 1983.

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2) Proceed with Development of Concept 10.3 as Originally Envisaged

This alternative involves proceeding with the original course of action. All consultation has taken place and Notice of Intention to Expropriate could be given very shortly. It involves an expenditure in the order of \$100 million over the planning period.

3) Approve-in-Principle a Development Program Involving Phase I of Concept 10.3 (Exhibit 4)

As it has not been possible to determine the precise optimal location for the new air carrier runway, Notice of Intention to Expropriate would not be possible until consultations were completed and the location of the runway were finalized. Adoption of this alternative involves an expenditure in the order of \$50 million.

## EVALUATION

### 1. Improved Air Service

Either Alternative 2 or Alternative 3 offer the opportunity for improved air service for the Hamilton/Niagara/Brantford area.

### 2. Airport Operations

Alternative 2 is likely marginally better than Alternative 3 in the short term although this cannot be stated definitively without further planning effort on Alternative 3. In the longer term, either Alternative 2 or 3 can be developed so as to maximize the operational efficiency of the airport. Alternative 1 offers no solution to the current lack of capacity and no prospect for future improvement in airside operational efficiency.

### 3. Federal Expenditures

In terms of costs to the Federal Government, Alternative 1 is best with Alternative 3 next and Alternative 2 worst.

### 4. Community Expectation

The general public expects a major development of the airport although the precise Concept is probably unclear. However, owners of land adjacent to the airport have been given access to drawings showing the general land requirements as for Alternative 2. Consequently, when judged in terms of community expectations, Alternative 2 and Alternative 3 are about equal with Alternative 1 worst.



5. Environmental Impact

Although none of the Alternatives have a significant environmental impact, Alternative 3 is probably marginally better than either Alternative 1 or 2.

6. Impact on Passenger Congestion at Toronto International Airport (TIA)

Alternatives 2 and 3 are clearly preferable to Alternative 1 as either of these Alternatives permit the accommodation of the natural demand of the Hamilton/Niagara/Brantford area at the Hamilton Airport.

SUMMARY OF EVALUATION

In summary, Alternative 3 is preferable to Alternative 2 in the current fiscal environment and preferable to Alternative 1 because of community expectations, because of the increase in level of service to the Hamilton/Niagara/Brantford area and because of the reduction in passenger congestion at the Toronto International Airport. A decision to proceed with Alternative 3 now will:

- 1) Permit consultation with the public, and Provincial and Municipal authorities on the precise location of the new air carrier runway.
- 2) Permit inclusion in the 1981/82 Main Estimates of an appropriate level of funding for land acquisition through expropriation and for airport development.
- 3) Permit airport master planning to proceed based on a Government decision and commitment to the level of funding required to implement the Program.
- 4) Permit consultants to be engaged for detailed planning of the development of the air terminal building expansion and associated facilities and services.



Finally, discussions with senior officials of Air Canada have indicated that Air Canada is prepared to serve the Hamilton Airport primarily on routes to Western Canada (Calgary, Edmonton and Vancouver via Winnipeg) following completion of the development program.

#### FINANCIAL CONSIDERATIONS

##### COSTS

It is estimated that the recommended capital expansion program is in the order of \$50 million.

###### Phase I of Concept 10.3

Land Acquisition	\$ 3,600.0
Airport Development	\$46,400.0 (see Table 6A)

Note that this capital cost estimate does not include replacement of the air traffic control tower as this is a firm future requirement for the existing operation.

In addition to the capital costs, the O&M costs are expected to increase by approximately \$1.5 million with the commissioning of the new facilities.

##### REVENUES

A preliminary assessment of the increase in revenues that would result indicates that these would be in the order of \$1.5 million in 1985/86 increasing with growth to in the order of \$2.0 million in 1991/92.

##### SUMMARY

From the foregoing, it is apparent that the increased revenues will do little more than recover the increased O&M costs, at least initially. In terms of indirect costs, however, there will be a substantial saving in airport access/egress costs by passengers using the Hamilton Airport in lieu of TIA. Also the reduction in passenger traffic at TIA as a result of accommodating the natural demand at Hamilton will improve the operational efficiency of TIA. However, given the relatively small proportion of the TIA traffic this represents, the savings to the Department or to the airlines are not large.

##### ENVIRONMENTAL IMPACT

As indicated earlier in the Discussion Paper, the impact on the environment was one element of the Study Program. Consequently, it can be stated with assurance that the environmental impact will be minimal so long as the normal safeguards are employed to protect the ecology.



Cognizance will be taken of the potentially disturbing effects of aircraft noise in designing the aircraft arrival and departure patterns. Assuming operation of the airport to maximize efficiency, the following table shows the number of people projected to be within the defined NEF contours for 1988.

Phase 1 of Concept 10.3

Greater than 40 NEF	0
Between 35 and 40 NEF	44
Between 30 and 35 NEF	414

Because the precise location of the new air carrier runway has not been determined, these figures should be considered approximate.

FEDERAL/PROVINCIAL RELATIONS

There has been much dialogue with the Province of Ontario on the expansion of the Hamilton Airport. Current indications are that the Province is anxious to proceed. Ontario has not been consulted on this precise recommendation pending Cabinet approval in principle of the level of expenditure associated with the proposed development.

INTERDEPARTMENTAL CONSULTATION

Officials of many Departments were briefed on the Air Transportation Program Investment Strategy. In this document, reference is made to a major capital program for the Hamilton Airport. In addition, Transport Canada has informed the Department of the Environment (DOE) that further review by an Environmental Assessment Panel is not required and has advised DOE of the change in development concept and the adequacy of planned mitigational measures to reduce environmental impact.

RECAPITULATION

Since the mid 1960's, various studies have been done and proposals made for the development of the Hamilton Airport to serve the air passenger demand of the Hamilton/Niagara/Brantford Area. The most comprehensive of these Study Programs led to the announcement by the Minister of Transport in 1978 that the existing Hamilton Airport would be expanded and developed to meet the needs of this important region. This was followed by a decision, announced in late 1978, on the precise Concept to be used for the development program. At the same time, it was indicated that the cost of this development would be in the order of \$100 million.

In the Fall of 1979, partly because of new traffic forecasts and partly because of the current fiscal environment, a Review was initiated. This Review has revealed that facilities to accommodate improvements in



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air service on routes which are forecast to be viable for a carrier to operate can be put in place at approximately half the cost previously envisaged if a phased program is adopted; if expanded air terminal facilities are provided at the same location as the existing facilities; and if the facilities are designed to meet the forecast demand of the late 1980's to early 1990's.

Announcing a Government decision on Phase 1 of a specific Concept will resolve community uncertainty; ensure adequate facilities will be provided to meet the future air transportation needs of the Hamilton area; permit planning and consultation to proceed on the precise location of the new air carrier runway; permit the determination of a multi-year balanced capital investment plan; and allow consultants to be engaged for detailed planning of the expanded air terminal building and associated facilities and services.



T A B L E S



TABLE 1

HAMILTON - PITTSBURGH TRAFFIC FLOWS

<u>YEAR</u>	<u>ENPLANED &amp; DEPLANED IN HAMILTON AND (% OF TOTAL)</u>		<u>THROUGH PASSENGERS TO AND FROM MONTREAL AND (% OF TOTAL)</u>		<u>TOTAL</u>
	<u>6,697</u>	<u>(40%)</u>	<u>9,863</u>	<u>(60%)</u>	
1972	10,230	(40%)	15,335	(60%)	25,565
1973	14,539	(38%)	23,583	(62%)	31,122
1974	10,823	(39%)	16,880	(61%)	27,703
1975	10,356	(38%)	16,704	(62%)	27,060
1976	11,458	(41%)	16,577	(59%)	28,035
1977	13,113	(39%)	20,512	(61%)	33,625

NOTE: The load factor on flights to/from Pittsburgh was very low, ranging from 20-30% in the period shown above. The Hamilton portion of the load therefore filled only about 10% of the seats offered. For example, in 1977 there were 122,153 seats offered to/from Pittsburgh but only 11,458 passengers enplaned or deplaned at Hamilton.



ANNUAL ENPLANED & DEPLANED PASSENGERS

(MEDIUM FORECASTS)

SECTOR	1978 ACTUAL	APRIL 1973 FORECAST		FEBRUARY 1979 FORECAST	
		1986:	1991:	1986:	1991:
Domestic	94,584	320,000	530,000	300,000	410,000
Transborder	13,113	280,000	510,000	1986:	20,000
Int'l Charter	71	470,000	840,000	1986:	25,000
Total	107,768	1,070,000	1,880,000	1986:	520,000
				1991:	700,000

\* Assumed scheduled services to:

- existing: Ottawa, Montreal
- additional by 1986: Winnipeg, Vancouver, New York, Chicago
- additional by 1991: Halifax

Charter services to:

- U.S., Caribbean and Europe

\*\* Assumes scheduled services to:

- existing: Ottawa, Montreal, Windsor, Pittsburgh
- additional by 1986: Winnipeg, Calgary and Vancouver via Winnipeg
- additional by 1991: Edmonton

Charter services to:

- U.S., Caribbean and Europe (to the extent practicable with an 8,000 ft. runway)

TABLE 2



PLANNING   PEAK   HOUR   PASSENGERS  
 (MEDIUM FORECAST)

	1986			1991		
	Deplaned	Enplaned	Total	Deplaned	Enplaned	Total
Domestic Scheduled	125	125	200	165	165	240
Transborder Scheduled	75	25	75	80	40	80
Total Scheduled	125	125	200	200	200	250
International & Transborder Charter	110	110	260	260	260	260
International & Transborder Total	110	130	260	300	300	300
Total Traffic	125	130	200	300	300	300

TABLE 3



TABLE 4

FORECAST ANNUALAIR CARRIER AIRCRAFT MOVEMENTS

(MEDIUM FORECAST)

TRAFFIC SECTOR AND AIRCRAFT CLASS	ACTUAL <u>1977</u>	FORECAST	
		<u>1986</u>	<u>1991</u>
<u>Domestic Scheduled</u>			
"100"	3400	8400	8300
"150"	-	-	<u>3000</u>
	3400	8400	11300
<u>Transborder Scheduled</u>			
"100"	1100	1100	1100
<u>Transborder Charter</u>			
"100"	-	1000	1300
<u>Int'l South Charter</u>			
"100"	-	400	500
"150"	-	<u>400</u>	<u>600</u>
		800	1100
<u>Int'l Europe Charter</u>			
"200"	-	<u>200</u>	<u>200</u>
	4500	11500	15000

Note: Figures are rounded to the nearest hundreds.

Aircraft classes refer to number of seats rounded to the nearest 50.



TABLE 5

PLANNING PEAK HOUR AIR CARRIER AIRCRAFT MOVEMENTS  
 (MEDIUM FORECAST)

	1986			1991		
	Arriving	Departing	Total	Arriving	Departing	Total
Domestic Scheduled	2	2	3	3	3	4
Transborder Scheduled	1	1	1	1	1	1
Total Scheduled	2	2	3	3	3	5
International & Transborder Charter	1	1	1	2	2	2
International & Transborder Total	1	2	2	2	3	3
Total Traffic	2	2	3	3	3	5



TABLE 6A

MAJOR CAPITAL COSTS  
(\$000)\*

LAND

Property Purchase (RUSZA)	\$ 450.0
Expropriation	3150.0
	3600.0

AIRPORT EXPANSIONAirside (B-727 Design)

Air Carriers Runway **	20,000.0
Taxiways	6,000.0
Apron Improvements and Extension	2,000.0

Groundside

Expand Air Terminal Building	5,000.0
Water Supply	3,000.0
Power Supply	3,000.0

Ancillaries

Fire Hall	500.0
Road Developments	2,000.0
Site Preparation	4,900.0

46,400.0

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50,000.0

\* Planning Estimates in Current Year Dollars

\*\* Includes Instrumentation and Lighting



TABLE 6B

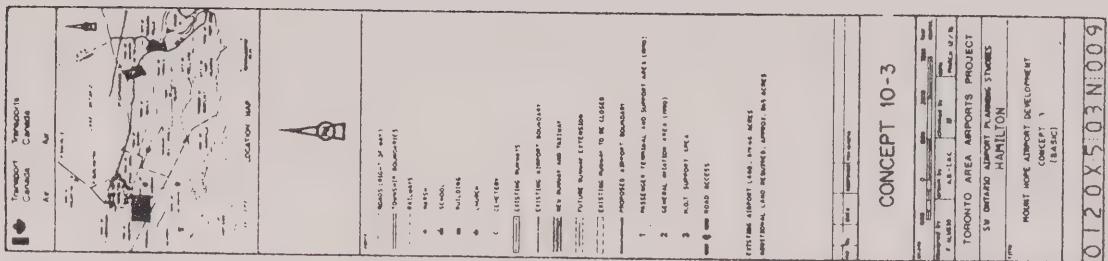
EXPANSION PROGRAM - FUNDS REQUIRED BY YEAR		(\$000)*			
		1980/81	1981/82	1982/83	1983/84
					1984/85
Land Acquisition (3,600.0)		450.0	2,500.0	650.0	
Airport Expansion (46,400.0)		500.0	2,500.0	7,500.0	9,000.0
					13,400.0
					13,500.0

\* Planning Estimates (Current Dollars)

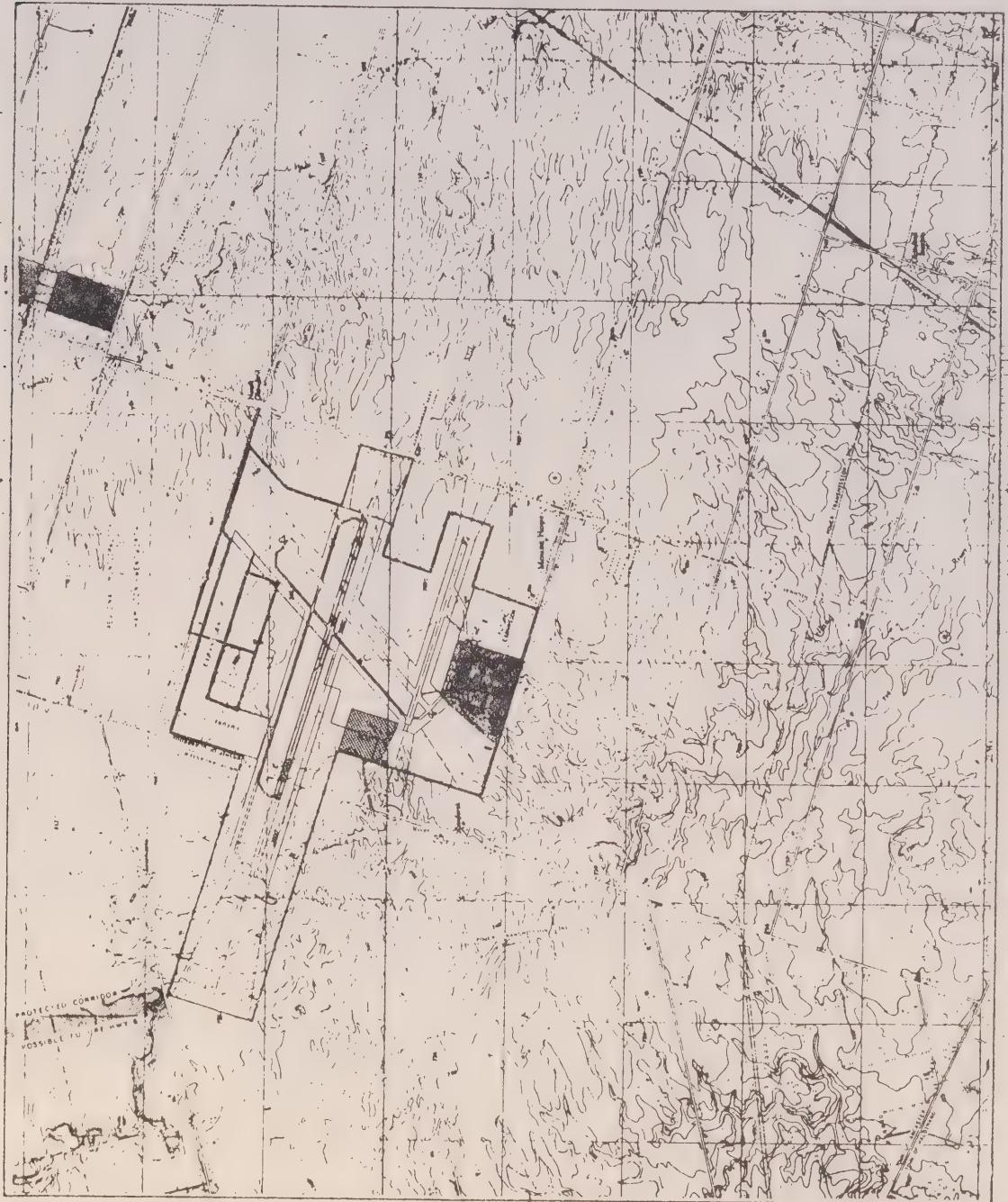


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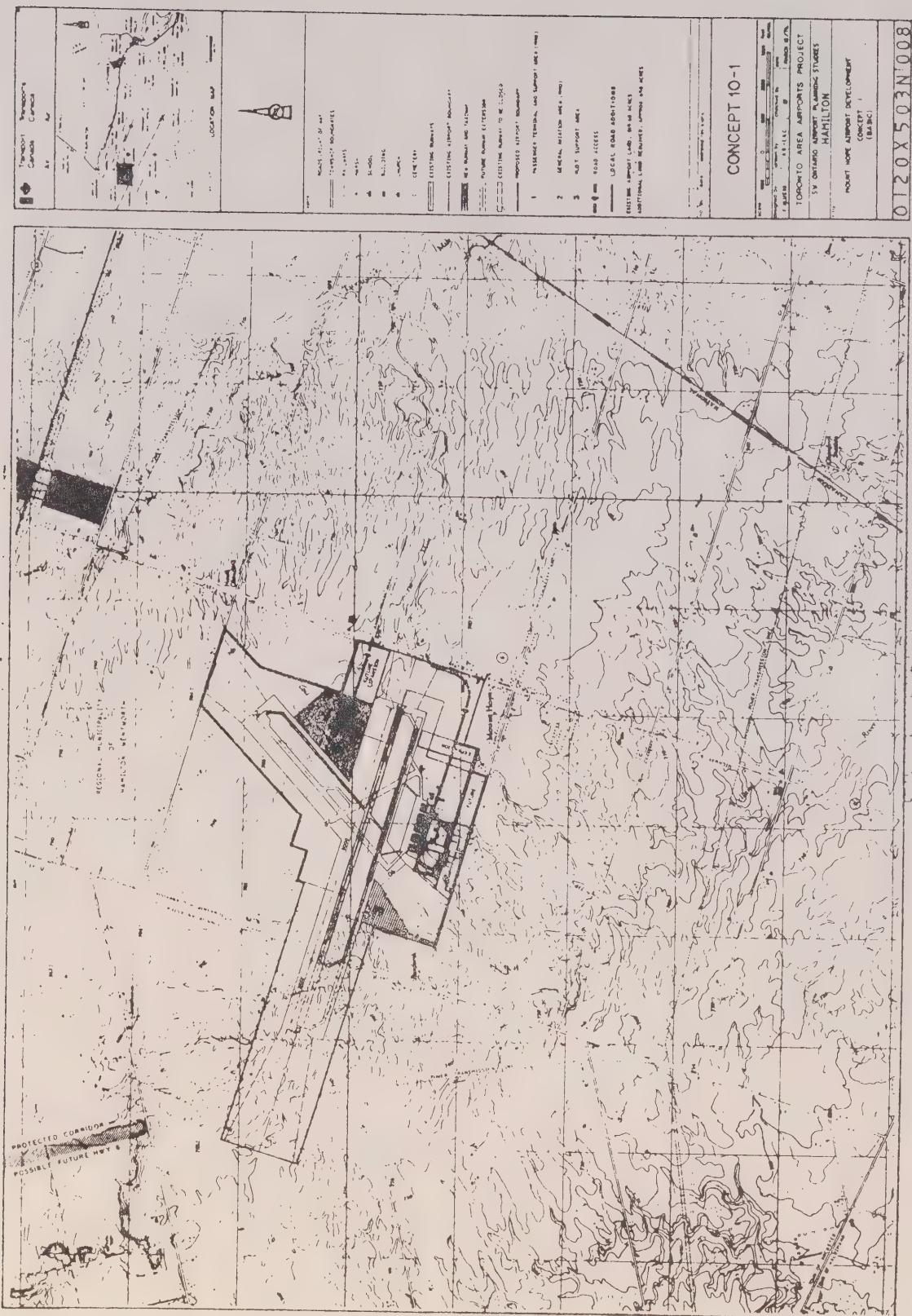




## CONCEPT 10-3









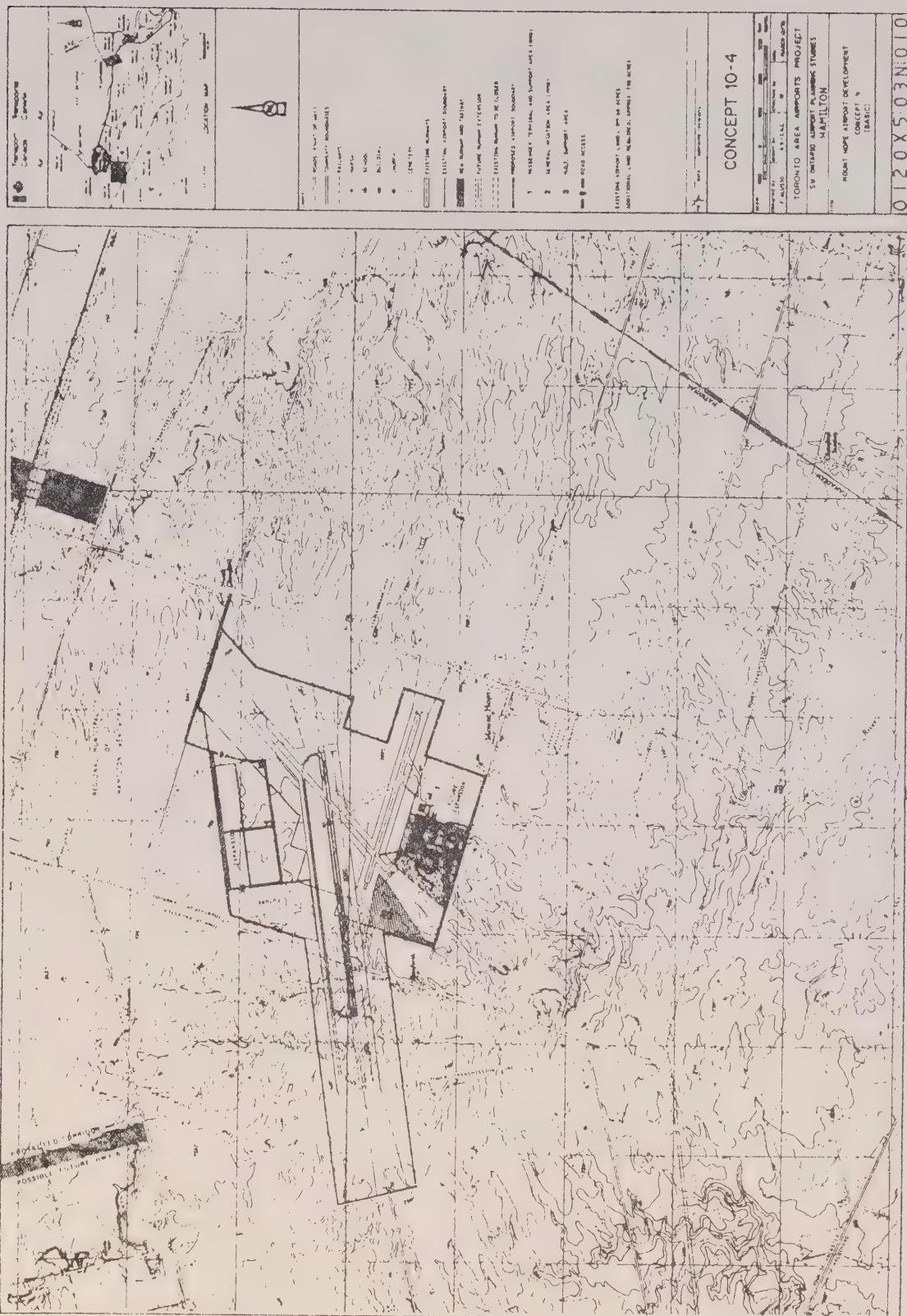
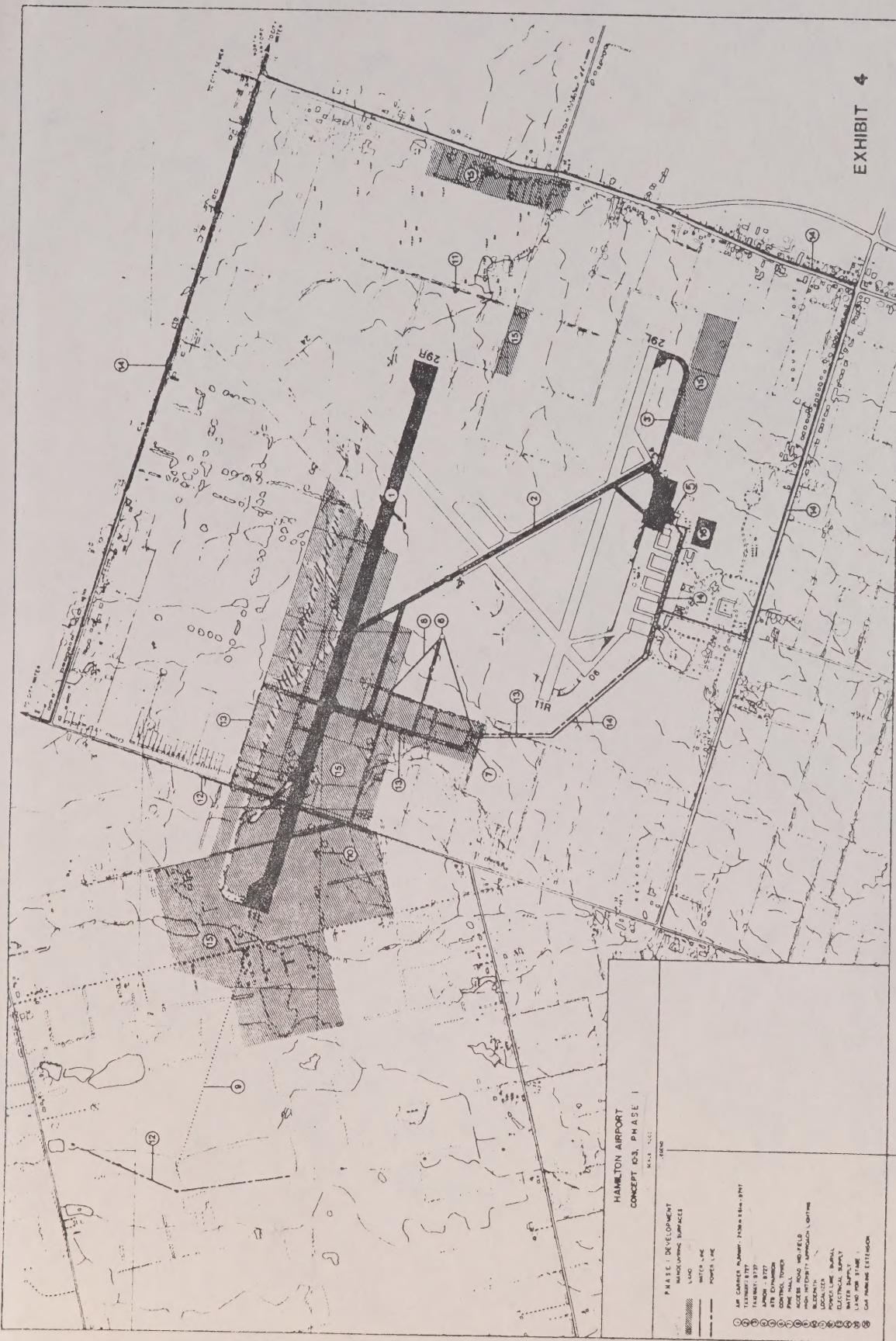




EXHIBIT 4







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The Giver  
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